

Gulf Oil 1-22 Hughes

4108. Top of core in G', phylloid algal wackestone w/ art. brachs w/ geopetal; encrust forams abundant, shelter & enhanced by minor solution; solution channels w/ flattened or encrust walls, well sorted particles strat. w/ c. calcite spar fill

8.6 ↑ encr. forams, ~~strat.~~ peloid wackest., occ. rotated geopetal struct. in brachs.

Alternating cm thick zones, more argil. (gr.) w/ larger conc. biocl. - crinoid brachs, bryoz. w/ wispy sh. lam., art. brachs (moderate agitated) reoccurring

11-12 buff, cm. colored wackest. - mudst., dense fine mud w/ poroids, sect. stylolites of gen. shale w/ 1 cm layer of shale w/ crinoids

12 burrowed top (mixed mud and packst.) *Osagia* packed. w/ rounded coated grains, bivalve, Ef, brach, crinoids abundant in brown fine biocl. matrix - no P & SP silic. Mnoids brachs

14 increasingly darker color - (gr.) → puritized grains, ↓ #15 sharp contact w/ gr. dk. gr. shale, mod. soft, calc. lenses, brach and bryozoa fragments, matrix mod. calcareous

14.5 calc. nodule ^{black} 5 cm long, 4 cm high, rounded w/ complex struct. in shale lam surrounding nodule; syndetic cracks w/ pyrite fill abund. through nodule

15.5 laminated (flaser) calc. silt. shale, thin flat calc. lenses,

15.7 massive gen. siltst. w/ cm sized darker CO₂ clasts

16.5 silt. shale (AA) w/ hug. corroded ^{darkened} clasts of CO₂, some cut by dk. brown stained root casts

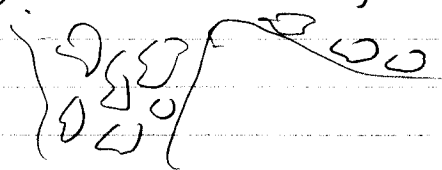
16.8 top H rep. CO₂ - fenestral fabric

- 16-18 ^(greenish tint) increasingly silty, fenestrate fabric, w/ wavy shale lam.
- 18.7 rounded biocl. packst., f.g., w/ ^{quartz} silt matrix, scat. mg. cm sized gr. mat.
- 20.5 AA less well sorted, scat. molds and micro XLN. ^{rext.} matrix w/ brown str. (poor psp)
- 21. poorly sorted biocl. packst., rounded peloid to fusulid, bivalve frags. w/er horizon. forams. silic. "nodular" area - whole silic.,
- 21.5 darkened (gr.) grains, scat. molds
- 22.2 v/sharp contact of packst. w/ cream-buff late fine mudstone separated by thin $\frac{1}{2}$ cm gr. shale
scat. brachs - thin shelled, antic, ; silic. encrusted (orange)
scat. \rightarrow asund. wavy grn. shale lam
- 31.8 contact str. CO₂ of H' w/ marinesh. ; grn. burrowed contact w/ carbonate
grn. sh., burrowed < 1 cm, hor. squashed burrows, horizontal sli. calc. to mod. calc. str. grade rapidly downward to burrow not (grn.) dk. gr. to black firm - mod firm shale, occ. obiculoid brachs, small wht. equidimensional brachs (common to interval)
dk. gr. shale only 4 cm thick, top and btm. rapid grade to grn. shale (fossilif.)
- 32.8 btm. sh. grade rapidly to weckest., ^{CO₂} ↑ lenses and biocl. debris - brachs primarily in grn. mod firm calc. shale
- 33. Fusulinid weckest., grn. arsil., sm. silic. of (print) crinoids
- 34.8 base H' v/sharp wavy-compressed contact, CO₂ grains "poured" onto shale surface.

H'

- 4135 flaser bedded grn. calc. fossilif. siltstone, argil., occ. lt. brn. CO₂ mottles, main cut and fold struct., occ. crinoid, pelec, other bivalves
- 4136 2-3cm alternating bands of pelec. mudst. (lt. brn.) alternating w/ grn. argil. siltst., edges of CO₂ w/ asphaltic in prognosis w/ presence stromatolite-like laminations
- 4137. base marine shale - 2 cm tan CO₂ layer w/ abundant pelec. molds w/ asphaltic staining, occ. silic crinoid, rare brachiopod shells, laminations in lime mud.

4137.4 soft grn. silty shale, blocky fract., lt. brn, grn. mottling - irreg. broken appearance, tubular and channel like fissures



sect. irreg. blocks of blk. am

4138 massive non calc. grn. silty shale w/ pervasive mottling of yellow and maroon colors, fine rootlike pattern

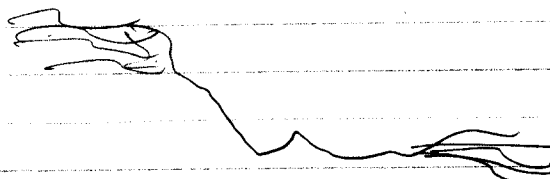
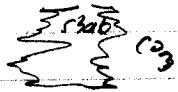
4139 calcic - dense pink stained lt. gr. mudstone as irreg. cm sized mottling "cottage cheese" concentrated in 20 cm zone (38.7 - 39.2)

top 41425 "in situ breccia", grn sh. matrix w/ embayed clasts of tan-buff fr. pelleted mudstone (no laminae), sect. patches of tan brown stained mud stn. ϕ and "micro molds"

43. breccia \rightarrow mudcracked, sol'n enhancement of cracks

43.9 cm. breccia soln channels, horizontal, floored by fr. debris w/ upper e. span fin, grt. silt btms. (internal sediment) mud is cracked - irreg. discontinuous cracks

4145. silty tan limi mud, wavy grn-gr. shale lam. - "horsetail"



"a lot of
compaction"

scar. fractures, v. fine anastomosing w/ calc. spar fill - compaction
in mod. soft shale

4148-48. increasingly silty w/ cm layers of grn. shale (silty)
no fossils, stylolitic compactional fractures abund.
occ. fractures (discontin.) w/ spar fill
gray grn. mottling w/ gradational boundaries
shale layers - finely laminated

4148.5 silic zone, possible bivalves, assoc. limi mud w/ micropores
next to scar. w/ brn. str.

4148.8 finely laminated ~~reddish~~ peloid grainst., micritin., moldic ϕ
w/ asphaltic str. ; scar. spherical tubes w/ spar fill

4150.5 btm. foram peloid grainst.

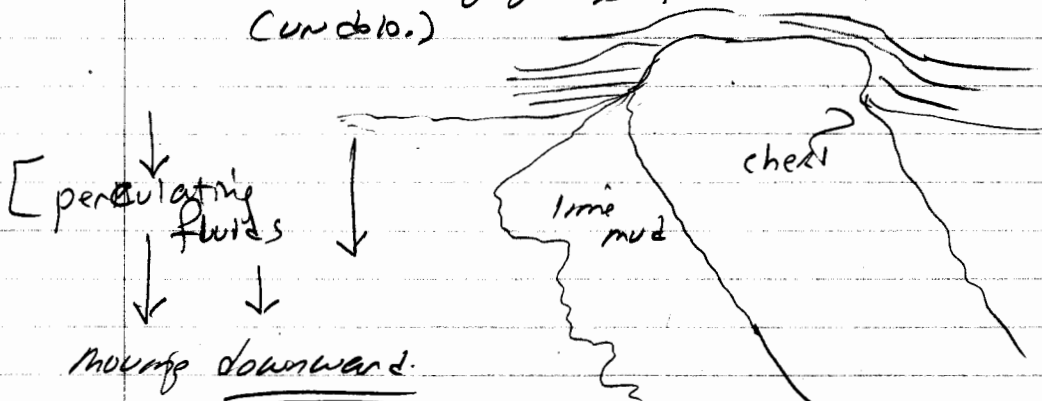
then 3 cm of foram, small bivalve packst., white
back to foram, bivalve packst., grainst.

4151.7 btm. of above

4152. argil. wisps in brack, crinoid wackest, gr. sro., layers
essentially shale ; small artic. bracks, small crinoids

4166-67 upper 3" oil stned., lower \emptyset unstained
 fusulinid bival. ~~partst.~~, wht., dolomitized w/ microxlw.
 dolo. spar w/ assoc. inter xlw. and moldic, vuggy \emptyset - fa.
 sized. ; porous - permeable - readily absorb wtr.
 scat. ppt. pyrite

68.5 v/porous again fusulinid bivalve weelst w/ micro xlw. Dolo matrix,
 vertical chest "pipe" w/ concretion drape over top (^{flint} - wisps hole
 lam. in overlying CO_2), flanked by zone of lt. brown lime mud
 (un dolo.)



preserved lime mud ~~under~~ beneath
 overhang

4169.5 ls., fusul., bivalve weelst, scat. oil stned molds,
 small vugs, 2mm wide vertical solution channels w/ dolo spar fill
 sm. microxlw. \emptyset

70.8 buff fusul., bivalve, brach weelst., lensoid CO_2 w/ gr-gr shale
 layers and wisps, sm. reddish silic. brach. + interior fill

71. cleaner CO_2 , w/ crinoids and above, occ. shaly strololites

73. dense, lime mud, scat crinoids, brachs \downarrow fusulinids
 72-73 moldic, vuggy, oil stned \emptyset , poor PSP

74. \uparrow dispersed sm. Argil. in cream, lt brn. lime mud., occ
~~pink~~ orange silic anisid

75.8 Str. CO_2 cm gradational contact with grn. sh. - blocky
 CO_2 increasingly argil. w/ burrow mottling
Abund. small brachs
in shale - orbicular brachs

76 sh. dk. gr. w/ hyp compacted lt. gr. burrow mottles
cm zones occ. w/ brach bars & silt. cm?

77 AA scap. orbicular brachs.
grade to dk. gr. gen, less mottling

78 sh., dk. gr. - silt., more firm than above, orbic. brachs,
occ. lenses grn. sh. (smooth face surface)

79.2 Str. dk. gr. shale

79.5 Gr. silty sh. w/ smeared nodules of tan. lime mud w/ occ.
productid. brach frags.

J, 83-83.5 ~~str.~~ burrowed lenticular lt. gr. wackest-pellet, aspid
brach crinoid, bivalves, oxid at base grading to
Str. over sev. cm as burrowed w/ grn. siltst.
~~grn. siltst.~~
grn. siltst. ~~wt.~~ massive, argil., w/ cm sized nodules
of brn. dense micrite, peppering in silt and nodules
caliche w/ mm-sized dk. brn. dense micrite blebs w/ hollow
centers - rootlets

83.5-
4186.5 → # of lt. gr. - brn. CO_2 nodules to top K zone
lt. gr., tan, peloid, foram, fine grained peloid and greenstone;
clasts of various lithol. in matrix of lt. gr. grn. gtz siltst.
cemented, no PSP

87. Frag. peloid, foram, small bivalve grn. mod. micrite. brn stained
calc. spec. w/ intergran. and Al_2O_3

88.5 grn. w/ cm-sized solid channel w/ skeletal debris partly fill

4189 - cm irreg. layer dolomitized - micoxln. and skeletal replacement containing frags of bryozoa - ramose, brach frags, bivalves, rounded biocl. (poorly sorted) overlain and underlain sharply w/ surrounding rock by 5/16. faintly laminated shale - stromatolite ?? - top definitely thicker



89.5 ^{essentially pure} fine X-strat. preserved in zone w/ vugs and molds w/ oil str., micoxln. calcite; ~~thin~~ ^{coated} strom. well rounded

89.7 micoxln. dolo. - wnt, bifa. biocl. wackest-pacast. patches c. xln. dolo.

90 dolo. micoxln., scat. crinoid brach frags (calcite) cm irreg. vugs (soli channels) of lt. green silty shale scat. green fuzzy waxes of lt. grn. shale

91 fm-m. xtn. dolomite 40% fm biocl. w/ mixed brach frags. irreg. mm sized vugs scat. w/ oil str.

92 AA

92.7 ^{4cm thick, calc.} gr.-grn. shale w/ lenses CO₂ mud in sharp stylolite contact w/ surround CO₂

94 lg. cm sized vertical burrows, mixed dispersed shale (lt. gr.) and horse tail laminations

95 tan, crinoid biocl., sandy wackest. - pacast., up to 60% dolo., crinoid replacement and micoxln matrix; P&P as matting - (ben) stained?, micoxln. matrix w/ some ^{shell} vugs and ^{shaly} molds sharp basal contact w/ ^{shaly} wackest. - burrowed

4196-4206.2 Lt. brn. to grn. tinted tan wackest., wispy shale laminated
and intermittent beds, dispersed shale and clean zones, burrowed,
crinoid, brachs dominate
lower 6" gradational to v. calc. firm gr-grn. shale -

4206.2 Sh. → w/abund. small brachs (productid)

4206.7 dk gr. sh., firm, inartic brachs

08.7 - 08.8 Gr shale, softer w/abund. brachs (productid) occ. Ramose
bryozoan rapid grad top and botm

08.8 sharp contact w/ wackest., gr. creamy dark micrite w/ sect. brach, Ef,
crinoids

08.8+ v/shaley dispersed clay

4213 v/shaley dispersed and wispy sh lam in gen. mudstone

transgressive
(K)

4214.5 v/silty (gr. sd.) brach, crin., Ef, wackest. w/ sect bryozoans
biocl. grain - crinoids ??

4215. grn. unfossil. shale, maroon shale lower ~ 20
-4223.